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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/832,884	04/12/2001	Steve M. Danziger	L/M-102-DIV	2718

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EXAMINER

PERT, EVAN T

ART UNIT

PAPER NUMBER

2829

DATE MAILED: 04/01/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Handwritten mark

Office Action Summary

Application No.

09/832,884

Applicant(s)

DANZIGER ET AL.

Examiner

Evan T. Pert

Art Unit

2829

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 December 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8, 10 and 44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 10 and 44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 44 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 44 recites that “the connections used for KGD testing” are “no longer useful” when the KGD device is placed in an end use device.” Yet, the meaning of “no longer useful” is not clearly defined by the specification, rendering the structure of the claimed device indefinite.

When a connection “is used” for KGD testing, it *may* become affected or damaged, but it is unclear how a connection for KGD testing actually becomes structurally “no longer useful” since any connection could somehow be useful (when reverse-engineering with an electrical probe, for example). For clarification, the examiner asks: What is the claimed structure that is structurally arranged to be “no longer useful” in the end use device? That is, what are the metes and bounds of a structure of “a connection” that is “no longer useful”?

For purposes of examination, an encapsulated connection, for example, is considered as being “no longer useful” directly at the encapsulated connection, even though an encapsulated connection is potentially useful as part of an electrical path embedded inside the encapsulant.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3, 4, 5, 6, 10 and 44 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 10-135281.

Regarding claim 1, Takahashi teaches “a known good die” (“KGD” per paragraph [0018]) having “optional solder ball array or wire bond connections” (wherein “optional” is an “intended use” bearing little patentable weight, yet wire bond pad connections 22 are reasonably “optional” since the integrated circuit device 1 could undergo testing and operation using only the BGA 23); solder ball array 23 on device 1 surface with the wire bond connections 22 electrically connected to the solder ball array connections 23 [abstract]; wherein the wire bond connections (used for testing the BGA electrical nodes) are inherently left pristine (i.e. “not affected”), and either the BGA or wire bond is available for end use connection [e.g. Fig. 3].

Regarding claim 3, bumps 23 and wire bond pads 22 are inherently “on the same side of the die.”

Regarding claim 4, bumps 23 and bond pads 22 “are on the substantially the same level of the IC” and either may inherently “provide contact with an end use device [e.g. Fig. 3].

Regarding claim 5, both the wire bond connections 22 and BGA connection 23 are inherently "not removed from the die after testing" [e.g. Fig. 3].

Regarding claim 6, the wire bond connections 22 are inherently "metallurgical connections" because these connections are the result of an inherent metallurgical bond between bond wire 4 and the metal bonding pad at connection 22.

Regarding claim 10, the "KGD" is inherently connected to an end use device as intended (i.e. "mounted" per paragraph [018]) as is inherently the eventual intention with all "known good die."

Regarding claim 44, the actual connections are "not useful" since they are embedded in encapsulant even though the electrical *pathways* (through the connections) are potentially "useful."

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 10-135281 as applied to claim 1 above.

The JP document is silent regarding "C4" and "stress tolerant" connections for ball bump array 23. Yet, applicant admits that "C4" and "stress tolerant" connections were known in the art prior to applicant's invention [Background of the Invention as well as paper 8, page 5, lines 1-4].

It would have been obvious to one of ordinary skill in the art at the time of applicant's claimed invention to adopt "C4" and/or "stress tolerant" connections for BGA 23. One of ordinary skill in the art would have been motivated to implement "C4" (controlled collapse chip connect) technology in order to obtain planar "control" of the "chip" as it "collapses" when the BGA is bonded, as was known prior to applicant's claimed invention [see MPEP 2144 for proper source of "motivation"]. One of ordinary skill in the art would have been motivated to adopt "stress tolerant" connections for BGA 23 in order to obtain connections that are more "tolerant of stress" such that they are more reliable, as was known in the art prior to applicant's claimed invention [see MPEP 2144 for proper source of "motivation"].

Response to Arguments

4. Applicant's arguments with respect to claim 1-8, 10 and 44 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Evan T. Pert whose telephone number is 703-306-5689. The examiner can normally be reached on M-F (7:00-3:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamand Cuneo can be reached on 703-308-1233. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

ETP
March 31, 2003


EVAN PERT